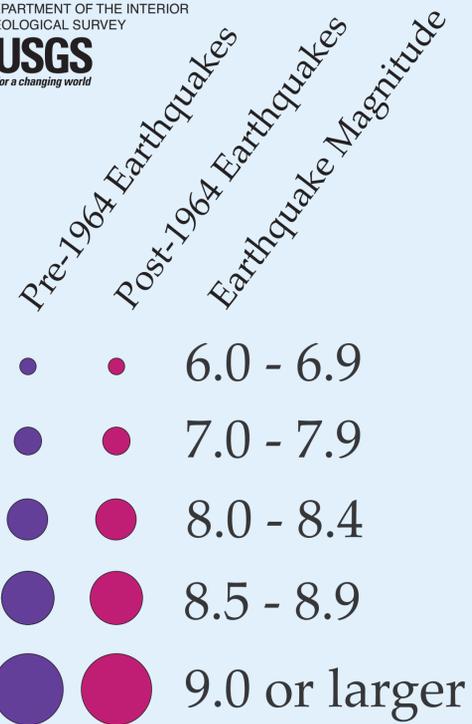


Earthquakes in Alaska

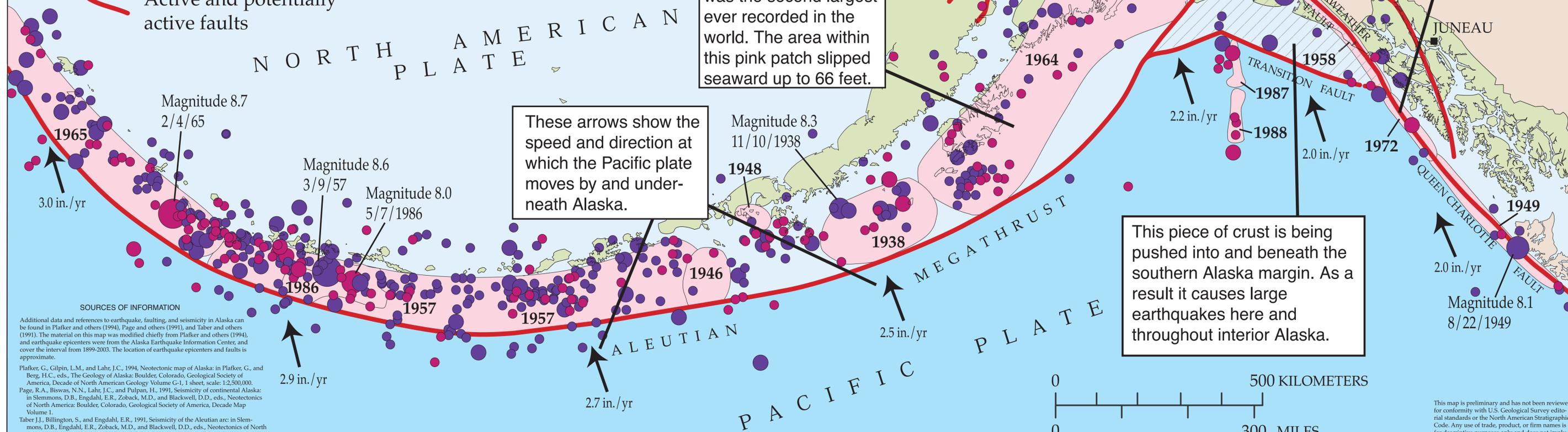
BY PETER J. HAEUSSLER AND GEORGE PLAFKER
2003

Earthquake risk is high in much of the southern half of Alaska, but it is not the same everywhere. This map shows the overall geologic setting in Alaska that produces earthquakes. The Pacific plate (darker blue) is sliding northwestward past southeastern Alaska and then dives beneath the North American plate (light blue, green, and brown) in southern Alaska, the Alaska Peninsula, and the Aleutian Islands. Most earthquakes are produced where these two plates come into contact and slide past each other. Major earthquakes also occur throughout much of interior Alaska as a result of collision of a piece of crust with the southern margin.



1964 Earthquake rupture zone and date of most recent rupture

Active and potentially active faults



Three magnitude 7 earthquakes occurred within 50 miles of Fairbanks in the last 90 years.

The Denali fault generated a magnitude 7.9 earthquake in 2002. This part of the fault ruptured, with horizontal offset of up to 29 feet.

The Queen Charlotte-Fairweather fault presents the greatest earthquake hazard to residents of southeast Alaska.

A fault beneath a fold in Cook Inlet resulted in a magnitude 7 earthquake in 1933 that strongly shook Anchorage.

The 1964 earthquake was the second largest ever recorded in the world. The area within this pink patch slipped seaward up to 66 feet.

These arrows show the speed and direction at which the Pacific plate moves by and underneath Alaska.

This piece of crust is being pushed into and beneath the southern Alaska margin. As a result it causes large earthquakes here and throughout interior Alaska.

SOURCES OF INFORMATION

Additional data and references to earthquake, faulting, and seismicity in Alaska can be found in Plafker and others (1994), Page and others (1991), and Taber and others (1991). The material on this map was modified chiefly from Plafker and others (1994), and earthquake epicenters were from the Alaska Earthquake Information Center, and cover the interval from 1899-2003. The location of earthquake epicenters and faults is approximate.

Plafker, G., Gilpin, L.M., and Lahr, J.C., 1994, Neotectonic map of Alaska: in Plafker, G., and Berg, H.C., eds., *The Geology of Alaska*: Boulder, Colorado, Geological Society of America, Decade of North American Geology Volume G-1, 1 sheet, scale: 1:2,500,000.

Page, R.A., Biswas, N.N., Lahr, J.C., and Pulpani, H., 1991, Seismicity of continental Alaska: in Stemmans, D.B., Engdahl, E.R., Zoback, M.D., and Blackwell, D.D., eds., *Neotectonics of North America*: Boulder, Colorado, Geological Society of America, Decade Map Volume 1.

Taber, J.J., Billington, S., and Engdahl, E.R., 1991, Seismicity of the Aleutian arc: in Stemmans, D.B., Engdahl, E.R., Zoback, M.D., and Blackwell, D.D., eds., *Neotectonics of North America*: Boulder, Colorado, Geological Society of America, Decade Map Volume 1.



This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or the North American Stratigraphic Code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.